

CASE STUDY 60

BioSynergy: Access to renewable energy and inclusive business promotion with sustainable biofuels in isolated communities of the Peruvian Amazon

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Country & sector:

Renewable Energy, Peru

Context

The majority of communities in the Peruvian Amazon do not have access to electricity, and their isolation complicates their connection to the energy grid. This hampers the development of these communities. At the same time, the Amazon has been identified by the Peruvian government as a strategic zone for the production of energy crops such as palm oil and *Jatropha*, the latter a native species for the area that is being promoted as a commercial crop for the production of biodiesel.

The Peruvian government strongly promotes the production and commercialization of biodiesel, through regulatory frameworks defining obligatory blending of biodiesel at national level (2% in 2009; 5% in 2011), whereas *Jatropha* was formally declared of "National Interest" for production of biodiesel in the Amazon. The Regional Government of San Martín initiated a regional Biofuels Program (PROBIOSAM), with funding for investigation and promotion of *Jatropha* in already deforested, degraded areas, as a means to provide productive alternatives to small-scale farmers, while seeking environmental sustainability. The program, developed and implemented with advisory services from SNV and supervised by a public-private platform of local organizations, seeks the validation of this new crop (crop management, productivity, profitability) while promoting Inclusive Business initiatives. In combination, these entrepreneurial initiatives contribute to fighting poverty through the inclusion of small-landholders in the biofuels production value chain.

In addition to employment and additional income generation for local farmers, the production of energy crops and biomass residues have great potential as a source for rural electrification, in order to satisfy domestic, productive and social needs; especially in isolated rural communities. This BioSynergy project seeks to implement an innovative model of renewable energy generation, taking advantage of biomass residues (including cow dung) and *Jatropha* seedcake for local production of biogas for electricity generation. With co-funding from the Regional Government of San Martín, a pilot project is being implemented with an isolated community, validating new technologies and applications at communal level, while assuring sustainability through the implementation of a communal management model. Furthermore, a demonstration project is being implemented in alliance (and co-financing) with the Peruvian INIA (National Institute for Agricultural Innovation), integrating the energy generation model into the *Jatropha* value chain.

SNV technical assistance is rendered to the "Mesa Técnica de Biocombustibles de San Martín" an inter-institutional bioenergy platform in the region, contributing to filling knowledge gaps necessary to consolidate the *Jatropha* production value chain, including its sub-products. Strong emphasis is on systematization of progress and lessons learned, creating a learning community for knowledge development and identifying potential for replication. As such, the project contributes to the consolidation of bioenergy options in the Amazon region, both for improving access to energy and generating employment and income. As such, the BioSynergy project advances national development strategies and policy priorities of local organizations, while strengthening local capacities to assure sustainability in the long term.

Clients and partners

The project is funded by FACT Foundation and CORDAID, Dutch organizations interested in communal applications of bioenergy on the one hand (main focus of FACT) and market-based inclusion of small-holders in the value chain on the other hand (main focus of CORDAID in this project). FACT also provides technical assistance in the project, with the in-house specialists they have. SNV implements this project together with Practical Action (formerly known as ITDG), a British NGO acting in Peru as LCB and with strong track-record in communal applications with renewable energy in Peru. SNV leads the project, assures sustainability through its networks with local organizations, emphasizing inter-institutional strengthening and knowledge development; while Practical Action delivers assistance in technical aspects of the project (biogas for electricity generation, etc) and RE management models. Full-time SNV consultants are hired by the project for different components in the project, working closely together with the teams of local organizations.

Local partners in this project are the Regional Government of San Martín (Departments of Economic Development, Energy, Agriculture, Natural Resources & Environment), the 'Mesa Técnica de Biocombustibles de San Martín' (a platform of actors from private & public sectors, civil society, NGO's, academia - related to the bioenergy sector), the National Institute for Agricultural Innovation (INIA) and others (such as the Program for Alternative Development - PDA). Both the Regional Government and INIA co-invest in this project and are involved in the implementation. Furthermore, local, national and international providers are involved in the project. The 'Mesa Técnica' acts as a supervising body and platform for knowledge exchange in order to orient investments and policy development. Coordination with national level organizations is provided in order to take the outcomes to a next level.

Intervention logic and methods

This project (timeline: 2010-2012) aims to contribute to a reduction in poverty levels in dispersed and isolated communities in the Peruvian Amazon, by demonstrating the technical, social, economic and environmental feasibility of an integrated and self-sufficient renewable energy access model, while contributing to the consolidation of the Jatropha value chain. Electricity for domestic, social and productive use is generated based on local production of biogas from cow dung and biomass residues, including the Jatropha seedcake, while vegetable oil is being produced as feedstock for the biodiesel market. This improves the income levels of small-scale Jatropha producers in the local biofuels market. Foreseen activities include:

- Analysis of progress in electrification and implementation of renewable energy options in the San Martín region, in order to prioritize communities to implement isolated systems for electricity generation and identify a suitable community to implement a pilot project.
- Baseline study (socio-economic, energetic) of the pilot project community and elaboration of technical studies refining the model of power generation based on bioenergy.
- Implementation of the pilot project in the community of Santa Rosillo: Access to electricity at village level based on local production of biogas.
- Development and validation of a management model to ensure sustainable implementation of the system at community level.
- Implementation of a bioenergy demonstration module in INIA: production of biogas for electricity, as an integral component of the Jatropha value chain.
- Accompanying the 'Mesa Técnica de Biocombustibles' and associated local organizations in the development and validation of the Jatropha value chain, including the use of sub-products.
- Systematization and dissemination of results and lessons learned, its discussion in public-private platforms, looking for a replica of the project (and its different components), where appropriate.

By developing these activities together with local organizations from public sector, private sector, NGOs, research institutes etc., in a multi-stakeholder approach, a joint learning process is assured, creating the capacity and know-how within local organizations to seek replication where successful. The anticipated results are increased access to renewable energy and increased income and employment opportunities for low-income residents and producers in these isolated Amazonian communities.

Outcomes

Under the leadership of SNV in this project, the following outcomes are foreseen (project time schedule: 2010-2012):

- Knowledge of the utilization of residues and alternative crops such as Jatropha as a source for bioenergy production and electricity generation.
- Validation of a high-productivity level production system for Jatropha, with associated food crops, and its transformation for energy production based on vegetable oil and biogas.
- Implementation of an integrated model for the production of electricity in isolated communities of the Amazon, based on local production of biogas with biomass residues and cow dung.
- Implementation of a management model validated in the community involved in the pilot project, identifying relevant actors, roles and responsibilities in the value chain, in order to ensure the sustainability of the production process and transformation model.
- Consolidation of the Jatropha value chain, including the uses of subproducts from the production process (such as the generation of biogas from Jatropha seedcake), opportunities related to carbon markets and the sustainable articulation between small-scale, associated producers of Jatropha with biofuel production companies, in a market oriented win-win approach.
- Systematization of lessons learned, dissemination of results and the generation of a learning community for knowledge exchange and policy development, seeking potential replication of successful components in the program.

Impact

In terms of impact, the following has been achieved through this project until now (2010; conclusion project foreseen in 2012):

- A community of 43 families (224 people) now has the perspective to obtain sustainable access to electricity from bio-energy as of 2011 (pilot project). Furthermore, the pilot project implies a potential to be replicated in thousands of communities in the Peruvian Amazon and abroad.
- An amount of more than 400 ha. of plantations of Jatropha has been established between companies and small producers, providing a productive alternative for deforested, degraded areas. Depending on the productivity of the plantations, this will increase the income of approximately 225 small producers (and more to come in the following years).
- Increased private investment in Jatropha production with an Inclusive Business approach (5 companies so far), providing a perspective for income and employment opportunities for small producers.

The project builds on SNV's presence and experience in the biofuels sector in the San Martín region since 2008, promoting inclusive business schemes and the establishment of public-private platforms for knowledge building, policy development and sustainable biofuels promotion, at that time still working with core subsidy from DGIS. The success of this previous work, the need for continuity and innovation, and the foreseen impact of the proposal convinced Cordaid and Fact Foundation to finance this 3 year project.

The Regional Government of San Martín and its regional president have played a key role in the success of this BioSynergy project, because it is the Government that from the start identified sustainable bioenergy as a critical issue to work on and adopted the Inclusive Business approach (also in other sectors). The Regional President identified renewable energy access as a main policy for the region, together with environmental sustainability. This has contributed to a sustainable and inclusive growth of the region since then, recognized by the population in the re-election of the government administration. A group of motivated representatives from private sector, public sector, research institutes, NGOs etc, united in the "Mesa Técnica de Biocombustibles de San Martín", combined with serious investments from the regional government (such as 3 M USD financing for Jatropha research

and promotion programs), attracted investments from outside the region (national and international companies), contributing to a consolidation of the inclusive business approach and ratifying the potential for bioenergy options in the Amazon region.

Lessons learned

The success of the experience demonstrates the need to work in inter-institutional platforms to create critical mass and to generate the necessary knowledge base to achieve the desired impact. It also demonstrates the importance of combining different levels of intervention: at policy and decision making level, but also at the level of farmers' organizations and communities, in order to respond to the needs and opportunities in the field and make knowledge-based decisions that make sense for the stakeholders and organizations involved. When working with the public sector and in public-private platforms, emphasizing the role of the private sector is key for giving continuity to the initiatives, due to the instability of people within the government (people changing/leaving positions).

With regard to the pilot project for electrification, it was clearly identified that a sound previous diagnosis is needed to identify – with all relevant stakeholders - the right place and focus for implementing such a pilot. The diagnosis (first step in the project) forced the project team to refocus the other components of the project, in order to better respond to the needs and interests of the stakeholders. This obviously has affected project planning and budget, but on the other hand, the findings of the analysis have allowed for technical simplifications in the pilot project that over time (and in replications) will imply gains in time and resources. It demonstrated the need for flexible projects and the value of flexible donors accepting those changes.

Sustainability

Sustainability in this project is looked after in different ways:

- In the whole project, we actively work together with relevant local actors from public sector, private sector and inter-institutional platforms, to strengthen capacities and establish the know-how to guarantee continuity on the long term.
- In the promotion of Inclusive Business models with biofuels, attention is being paid to international sustainability criteria (such as RSB), most importantly in the Amazon: avoiding deforestation, installing plantations in already deforested areas without actual production, seeking intercropping with food crops.
- Systematization of results and lessons learned (in publications, videos, etc) and dissemination (in events, websites, virtual platforms, etc) will guarantee sharing of the knowledge at different levels, seeking replication and scaling where possible.
- The pilot project is meant to demonstrate the feasibility of an integrated and self-sufficient renewable energy access model, while validating productivity and profitability within the *Jatropha* value chain. In that sense, replication and scaling up will only be aimed at, in case the analyzed options effectively present a more potentially effective alternative and only if minimal necessary conditions are present. In that sense, risks are present that foreseen outcomes and impact will not be able to be achieved or maintained, when moving from pilot project to large-scale roll-out of implementation in the follow-on phases.
- A key feature of the pilot project for electrification (and learning from other experiences), is the establishment and implementation of a management model that permits the community to take charge of their bioenergy power system, do maintenance, administration, etc; with all capacity-building and technical assistance required.
- If successful, huge potential exists for scaling and replication of the BioSynergy project. Due to the interest of donors in issues related to climate change, good potential might exist for additional funding and partnerships.

Quotes:

For the richness of the case study to come across, photos and quotes are needed. Photographs must be of high quality⁷ (high resolution) and show what SNV does: improved client performance, improved enabling environment, or impact. Quotes and testimonials make a case study convincing and interesting. Include reactions from clients, their target population, partners, LCBs and donors in the case study where possible. Quotes on what makes SNV ('s intervention) special, SNV's specific added value, by other development organisations / donors, are especially interesting for PRM purposes ("PRM jewels"). Quotes and photos are of course best collected throughout the year.

Standard data

- Start and end date of the contract within which the intervention(s) occurred: 01-1-2010 until 31-12-2012
- Composition of the team: SNV-staff/LCBs and external consultants: Martijn Veen, Abel Pezo, Jean Velásquez. LCB (Practical Action): Fernando Acosta, Benito Ramirez. Local allies (members of 'Mesa Técnica de Biocombustibles de San Martín', Regional Government of San Martín, INIA).
- Number of PP-days already invested and planned to be invested per category (staff/LCB/external consultant).
 - PPdays invested 2010:
 - Staff: 106
 - LCB: 120
 - Consultants: 198
 - PPdays to be invested in total (expected 2010-2012):
 - Staff: 428
 - LCB: 360
 - Consultants: 1350
- Relevant partnerships: CORDAID, FACT Foundation, Practical Action (formerly known as ITDG), Gobierno Regional de San Martín, Instituto Nacional de Innovación Agraria (INIA)
- The financial resources to be invested:
 - CORDAID: € 241,419 (cash)
 - FACT Foundation: € 149,863 (cash)
 - SNV: € 43,627.60 (staff, in-kind, cash)
 - Practical Action: € 5,517.68 (staff, in kind)
 - Total: € 440,427**
- Additional co-investment in pilot projects assured later:
 - Regional Government of San Martín: € 26,832.48 (cash, not considering staff investment)
 - INIA: € 7,590.51 (cash, not considering staff investment)
- Client satisfaction and enhanced capacity scores (scores on outcome and impact): 3 (satisfactory)

⁷ Instructions on where to upload the photos will follow.